

Name _____

Math 1

Exam 8

For all problems, show all work. You may use a graphing calculator. Make graphical displays as neatly as possible. Good luck! ☺

For the first two problems, refer to the following information:

The table below contains 2007 U.S. Census estimates of the number of people (in thousands) in Illinois, Indiana, and Iowa living in households with different income/poverty ratios. A ratio of 100% indicates that the person lives in a household whose income is exactly at poverty level; below 100% is below poverty level. Individuals living in households with less than 125% of the poverty level are eligible for certain federal benefits.

state	$\leq 50\%$	$50\% - 100\%$	$100\% - 125\%$	
Illinois	697	784	486	
Indiana	356	399	252	
Iowa	135	182	107	

Note that the last row and last column are blank. You may use these cells as you see fit.

1. (8C, 8D) Of the people living in Illinois, Indiana, and Iowa in households below 125% of poverty level, what percent live in Iowa? Round your answer to the nearest hundredth of a percent.

2. (8C, 8D) Of the people living in Illinois in households below 125% poverty level, what percent live in households at or below 50% of the poverty level? Round your answer to the nearest hundredth of a percent.

For the next three problems, refer to the following information:

According to Sports LLC Basketball Reference, the following are the total number of points scored by each of the top eleven players of two basketball teams during the 1992-1993 season:

team											
Chicago Bulls	2541	1510	1017	1009	422	408	356	354	341	246	222
Phoenix Suns	1944	1388	949	947	892	791	757	436	332	315	313

3. (C3, 8A) Create a graphical display to summarize each set of data in a meaningful way. Briefly explain your choice of graphical display.

4. (C3, 8B) Compare shape, center, and spread of the two data sets.

5. (C3, 8A, 8B) Based on your analysis of the data, what would you predict for the outcome of a basketball game between these two teams? Explain your prediction.

For the next three problems, refer to the following information:

The table below contains data from the U. S. Department of Energy. In this table, x is the number of years since 1994, and y is the number of alternative fuel vehicles in thousands.

x	y		
1	333		
2	352		
3	368		
4	384		
5	408		

Note that the last two columns are blank. You may use these cells as you see fit.

6. (8A, 8F) Sierra uses the regression equation $y = 18x + 317$ as a model for the data. Make a residual plot based off of Sierra's line. Label axes appropriately and provide appropriate scales.



7. (C3, 8F) Based solely on your residual plot (without finding the line of least squares), offer Sierra a suggestion to improve her model. Explain why your suggestion will result in a better model.

8. (C3, 8E) Use your calculator to determine the line of least squares and the correlation coefficient. You may round to the nearest thousandth. Explain what the slope of the line tells you about the data. Explain what the correlation coefficient tells you about the data.